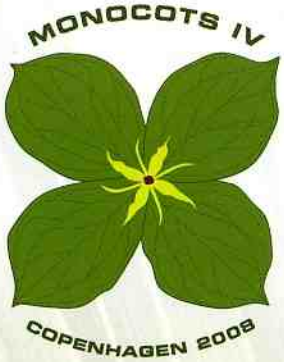
# Elements of the evolution in the genus Cryptocoryne (Araceae)

Jacobsen, Niels; Lange, Conny Bruun Asmussen; Bastmeijer, Jan; Budianto, Hendra; Idei, Takashige; Ipor, Isa B.; Bin Othman, Ahmad Sofiman; Sookchaloem, Duangchai; Wongso, Suwidji; Ørgaard, Marian

*Published in:*
Monocots IV: Abstracts

*Publication date:*
2008

*Document version*
Publisher's PDF, also known as Version of record




# Abstracts

THE FOURTH INTERNATIONAL CONFERENCE:

## The Comparative Biology of the Monocotyledons

THE FIFTH INTERNATIONAL SYMPOSIUM:

## Grass Systematics and Evolution

COPENHAGEN, DENMARK

11-15 August 2008

## Elements of the evolution in the genus *Cryptocoryne* (Araceae)

Niels Jacobsen[1], Conny Bruun Asmussen Lange[1], Jan Bastmeijer[2], Hendra Budianto[3], Takashige Idei[4], Isa B. Ipor[5], Ahmad Sofiman Bin Othman[6], Duangchai Sookchaloem[7], Suwidji Wongso, Marian Ørgaard[1]
[1]Dept. of Ecology, Faculty of Life Sciences, University of Copenhagen, Rolighedsvej 21, Denmark, nika@life.ku.dk; [2]Nationaalherbarium, Leiden; [3]Banjarmasin, Kalimantan, Indonesia; [4]Osaka, Japan; [5]University of Malaysia, Kuching; [6]Universiti Sains Malaysia, Pinang; [7]Faculty of Forestry, Kasetsart University, Bangkok

*Cryptocoryne* species are found in different aquatic to amphibious habitats in the river systems in the tropical regions of Southeast Asia. *Cryptocoryne* reproduces by seeds, but the extension of the populations is mainly dependant upon vegetative reproduction by subterranean, far creeping rhizomes. In a number of cases two or more species may inhabit the same stream and river systems, but then usually in different niches created by different topography and water levels. Of the about 60 taxa named and accepted at the species level, more than 15% are of hybrid origin; and including unnamed accessions, more than 20% are recognised as being of hybrid origin. By artificial pollination more than 25 interspecific viable $F_1$ families have been obtained. Apparently *Cryptocoryne* species hybridize easily, and because of their vegetative reproduction, the hybrids produced over time, are accumulated to a degree not usual in flowering plants. This indicates that hybridization between species is a much more common phenomenon than generally believed. Almost all known species of *Cryptocoryne* are in cultivation, and cytological and molecular investigations are in progress to elucidate their relationships. The occurrence of different chromosome series within the genus poses some interesting evolutionary questions.

## Resistance, emigration or adaptation: Did *Hordeum* survive the Pleistocene in situ in Patagonia?

Sabine S. Jakob[1], Enrique Martinez-Meyer[2], Frank R. Blattner[1]
[1]Leibniz Instituts of Plant Genetics and Crop Research (IPK), Correnstr. 3, Germany, jakob@ipk-gatersleben.de; [2]Instituto de Biologia, Universidad Nacional Autonoma de Mexico, Mexico City, Mexico 04510

In the Patagonian steppe occur three monophyletic and very closely related diploid *Hordeum* species. They split within the last 1.3 Myr. Phylogeographic analyses based on chloroplast *trnL-F* sequences and paleodistributional niche modeling were used to study their evolutionary history. The geographical distribution of haplotypes indicates at least one vicariance event, separating one of the species from the progenitor of the remaining two. However, using exclusive molecular data it was impossible to develop a conclusive hypothesis about their origin. In fact the observed haplotype patterns indicate that large populations without spatial restriction survived the ice ages. These findings were strongly supported by the paleodistributional models, which suggested the occurrence of *Hordeum in situ* even during the last glacial maximum about 18,000 years ago. Combining the complementary results of phylogeography and paleodistributional models offered clear insights into their evolution. Although they occur today in sympatry, they are adapted to different ecological niches on a local scale. However, this ecological differentiation was not the reason for speciation, but evolved after the species became reproductively isolated by geological barriers. The nature of these barriers is currently unclear, as the Argentine Patagonian steppe was probably never completely fragmented by glaciers.

## Ontogeny of the phytomelan crust of seeds in families of the order Asparagales

Lise Bolt Jørgensen
University of Copenhagen, Gothersgade 140, Denmark, LiseB@bio.ku.dk

Most families in Asparagales are characterized by having black seeds with a hard and brittle outer layer, crust, of black phytomelan that develops in the outer epidermal cell wall of the seed coat. Only *Gasteria verrucosa* (Asphodelaceae) has so far been investigated by histochemical methods during the ontogeny of the seed, showing that the formation of the fairly thick phytomelan layer is preceded by a comparably thick,